SECTION C3
LATTS STRATEGIC RAIL SYSTEM

The LATTS Scope of Work foresaw a focus upon "… the mainline railroad system, plus major connections to port facilities." Thus, the analysis concentrated upon the principal system components with regard to Latin American trade flows. Based upon adopted criteria, evaluations were conducted to identify those rail facilities which were included in the LATTS Strategic Rail System.

SYSTEM DESIGNATION CRITERIA

Criteria were adopted for purposes of designating the LATTS Strategic Rail System. These criteria were as follows:

1. Include that portion of the rail system designated as Principal Railroad Lines by FRA which have annual freight volumes exceeding 20 million gross ton-miles per mile.

2. Include all STRACNET mainlines.

3. Include existing rail line connections to all those ports that are part of LATTS Strategic Transportation System.

4. Include existing rail lines which function as part of an inland port operation.

5. Include additional lines which were deemed to be of special interest to Alliance members.

The lines that met these criteria are shown on **Exhibit C3-1**.

While the system denoted in Exhibit C3-1 comprises the bulk of the Strategic Rail System that was examined by LATTS, additional investigations were conducted regarding rail traffic flows to determine the need for additional line segments to be included. A discussion of these analyses and the adjustments made in the LATTS Strategic Port System is contained in a subsequent section. A final Strategic Rail System is presented at the conclusion of this discussion.

Principal Railroad Lines

The Federal Railroad Administration (FRA) has defined a core rail system known as Principal Railroad Lines. These rail lines have the following attributes:

- Amtrak service
- National defense essential
- Annual freight volumes exceeding 20 million gross ton-miles per mile (MGTM/M)

Exhibit C3-1
INITIAL LATTS STRATEGIC RAIL SYSTEM

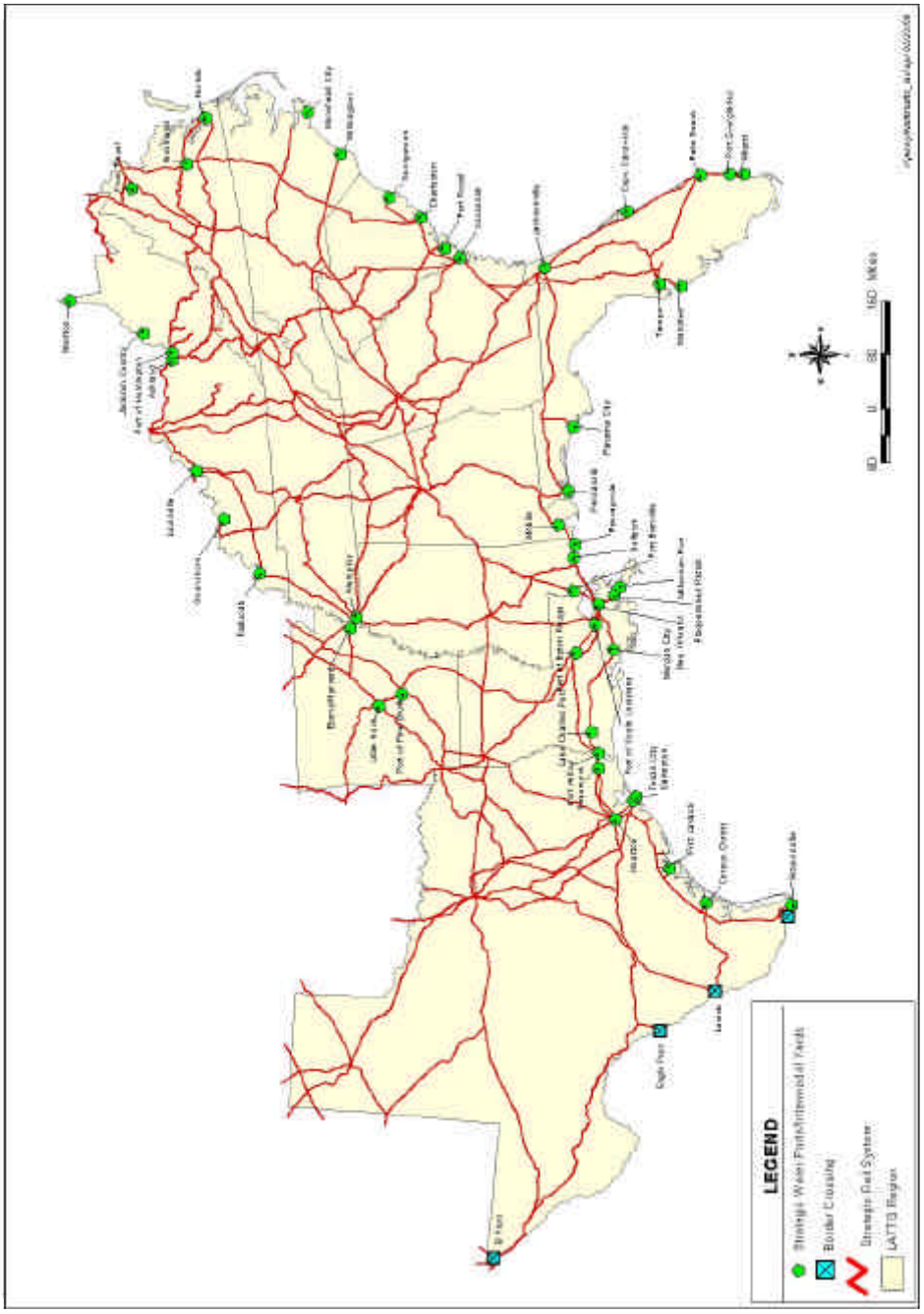


Exhibit C3-2 displays the Principal Rail Network as so defined.

Amtrak Lines

Because of their passenger orientation, LATTS is not concerned with Amtrak services. Nevertheless, it is typical that the criterion concerning freight volumes (discussed below) encompasses lines which also happen to provide Amtrak service. Segments of the Principal Railroad Lines system which met the freight volume criterion and which also accommodated Amtrak service were included in the LATTS Strategic Rail System. Nevertheless, their inclusion had nothing to do with Amtrak passenger services.

National Defense

An advantage of the Strategic Rail Corridor Network (STRACNET) is the ability of these lines to transport oversize (high/wide) loads. Therefore, STRACNET mainlines were included in the LATTS Strategic Transportation System even if they did not meet the freight volume criterion. However, connector lines from STRACNET mainlines to military facilities were not included since they are not relevant to Latin American trade.

20 MGTM/M

The freight volume criterion defines mainline railroads which are most important to the movement of freight. These mainlines were logical element for inclusion in the LATTS Strategic Transportation System.

Additional Rail Lines

In addition to the FRA's Principal Railroad Lines, other line segments were added to the LATTS Strategic Rail System even though they did not qualify under the system criteria presented earlier.

Intermodal Facilities

There are certain rail-highway intermodal facilities which function as off-dock facilities for waterports. This situation exists at Charleston, South Carolina and Miami, Florida, as well as other locations. These highway connections were considered to be part of the LATTS Strategic Transportation System, a matter discussed subsequently.

Also, there is the matter of "inland ports" for which rail provides all or a portion of the total movement from waterport to inland port. The Norfolk Southern Railway facility at Fort Royal, Virginia is an example of a "pure" inland port. These rail facilities were included in the LATTS Strategic Rail System.

Because of its importance to the state of Arkansas, the rail intermodal yard at Ebony/Harvard was included as a strategic port even though it does not have port facilities at the site (near the Port of Memphis). The rail components were included in the LATTS Strategic Rail System.

Exhibit C3-2
THE FEDERAL RAILROAD ADMINISTRATION PRINCIPAL RAIL NETWORK

Waterport Connections

In some instances, the freight mainlines in the Principal Railroad Line system may not include rail connections to the waterports which were included in the LATTS Strategic Transportation System. These connections were considered to be important within the focus of this study.

Alliance Member Additions

Each Alliance Member had the opportunity to review these criteria as it applied to their particular situation. In some cases, rail segments were added to the LATTS Strategic Rail System because of their special interest to Alliance members.

LATTS RAIL TRAFFIC

Rail traffic data were used to determine net increases in traffic between the base year (1996) and the forecast year (2020). The data contains two-way movements, i.e., that flowing both ways between origin- and-destination pairs.

RAIL TRAFFIC TYPES

Rail traffic was assigned to three categories – Seatrade carload, Seatrade intermodal, and cross-border. The Seatrade category consisted of both imports and exports and distinctions were made between intermodal (container) and those rail movements which would occur in rail cars, principally commodities in break-bulk and bulk form. There was no distinction in car type in the cross-border category.

TONNAGE

A summary of the LATTS rail traffic tonnage is the subject of **Exhibit C3-3**. As shown therein, cross-border traffic represents the fastest growing rail traffic segment and will be the largest segment in Year 2020 by far. It will be over twice as large as Seatrade carload traffic which was the largest in 1996. While intermodal tonnage is far smaller than the other two segments, it is much lighter (weight) per transportation unit. Therefore, its full impact is not truly reflected by tonnage.

Exhibit C3-3
LATTS RAIL TRAFFIC

Traffic Type	1996	2020	Increase	Percent Increase
	(million tons)			
Seatrade Carload	13.1	32.3	19.2	147
Seatrade Intermodal	1.2	6.0	4.8	400
Cross-border	10.7	63.3	52.6	492
Totals	25.0	101.6	76.6	

Data Reduction

Due to the multiplicity of all of the rail movements (multiple origin-destination pairs and associated flows), it was decided to reduce the data used in these analyses. This was done in a two-step process.

Location Consolidation

First, location-specific data, such as individual ports, were combined into regional or state groupings. An example is the South Florida ports of Miami, Everglades (Fort Lauderdale), and Palm Beach. A full listing of the consolidations is provided in **Exhibit C3-4**.

Data Screening

It was also decided to screen the data in an attempt to identify those rail traffic flows that were sizeable enough to potentially impact the rail system. Flows between origin and destination pairs were considered first. It was recognized, however, that dependence on this criterion alone might not result in adequate consideration of locations where a multitude of smaller flows might originate or terminate without the same origins or destinations at the other end of the move. Thus, it was decided to include a means of identifying these locations also, independent of the origin-destination pair determination.

Screening Criteria

Use of railroad facilities is typically measured in terms of tons or carloads, and rail line use in terms of gross ton-miles per mile (GTM/M), usually expressed in millions, or if the expression is reduced algebraically, simply gross tons. The gross ton includes the weight of the equipment as well as the lading and a proportional amount of locomotive tonnage.

A rail line which carries 5 MGTM/M in a year is considered to be on the dividing line between a light density line and a secondary main line. As used in the federal definition, a Class A mainline transports over 20 MGTM/M (used in large part to define the LATTS Strategic Rail System). The 5MGTM/M level is enough, however, to make a noticeable impact on a rail line. Thus, the net tonnage, i.e., the weight of the commodity being shipped, was converted to gross tonnage for purposes of measuring rail system impact and all origin-destination locations with over 5MGTM/M were noted.

Tonnage Conversion

Given that most rail cars weigh in the neighborhood of 30 tons and that many will move one way empty and, combined with an allowance for the weight of the locomotive units powering the train, a factor of 1.6 was selected to expand net tons to gross tons for carload traffic. The factor used for intermodal traffic was much larger, 4.0, as intermodal containers average 14 to15 tons per unit and not only does the weight of the car and locomotives have to be considered, but also the containers. The commodity-to-tare weight ratio is one of the largest disadvantages related to intermodal movements.

Exhibit C3-4
WATERPORT GROUPINGS

Group	Ports
North Carolina	Morehead City - Beaufort Wilmington
South Carolina	Georgetown Charleston Port Royal
South Florida	Palm Beach Port Everglades Miami
Florida Panhandle	Panama City Pensacola
Mississippi	Pascagoula Gulfport
Louisiana Southeast	Millenium Port Plaquemines Parish New Orleans Port of South Louisiana
Texas North	Port Arthur Beaumont
Texas North Central	Houston Texas City Galveston Freeport

Exhibit C3-5 reveals the threshold measures in terms of net tons which approximate the gross ton measures discussed above. Since cross-border flows are a mixture of carload and intermodal traffic, an average between the two was selected. Rail line thresholds were selected at 10 percent of those deemed appropriate for single locations (300,000 tons).

Exhibit C3-5
SCREENING CRITERIA

	Carload	Intermodal	Cross Border
	(million tons)		
Locations	**3.0**	**1.0**	**2.0**
Flows	**0.3**	**0.1**	**0.2**

SIGNIFICANT TRAFFIC GENERATORS AND FLOWS

The threshold measures were applied to the database and the results graphically depicted nationwide on a series of maps. The maps depicting growth in trade (forecast year – base year) are presented and discussed in the following paragraphs.

Seatrade Carload Flows

Representing 25 percent of the forecast growth in Latin American rail traffic, Seatrade carload flows, as shown on **Exhibit C3-6**, are concentrated around Gulf Coast ports, especially in Southeast Louisiana on one end, and Midwestern and Mid-Atlantic states on the other. The traffic movements shown on the exhibit represent just over one half of all of those associated with LATTS Seatrade carloadings.

Exhibit C3-7 depicts rail flows for worldwide Seatrade through the LATTS ports. The principal flows are virtually the same as for Latin American trade, but with increased activity related to Florida and Texas ports. Additional activity generally occurs at all Alliance ports with growth in intrastate flows and beyond the Alliance Region principally to the Northeast.

Seatrade Carload Points

Exhibit C3-8 shows major rail traffic generation points for Latin American trade. The largest carload points are also located on the Gulf Coast. Gulf Coast ports account for more bulk trade with Latin America than do the Atlantic ports which tend to be more oriented to containers than bulk commodities. Outside the Alliance Region, the states of Minnesota, Illinois and Pennsylvania stand out.

Exhibit C3-6

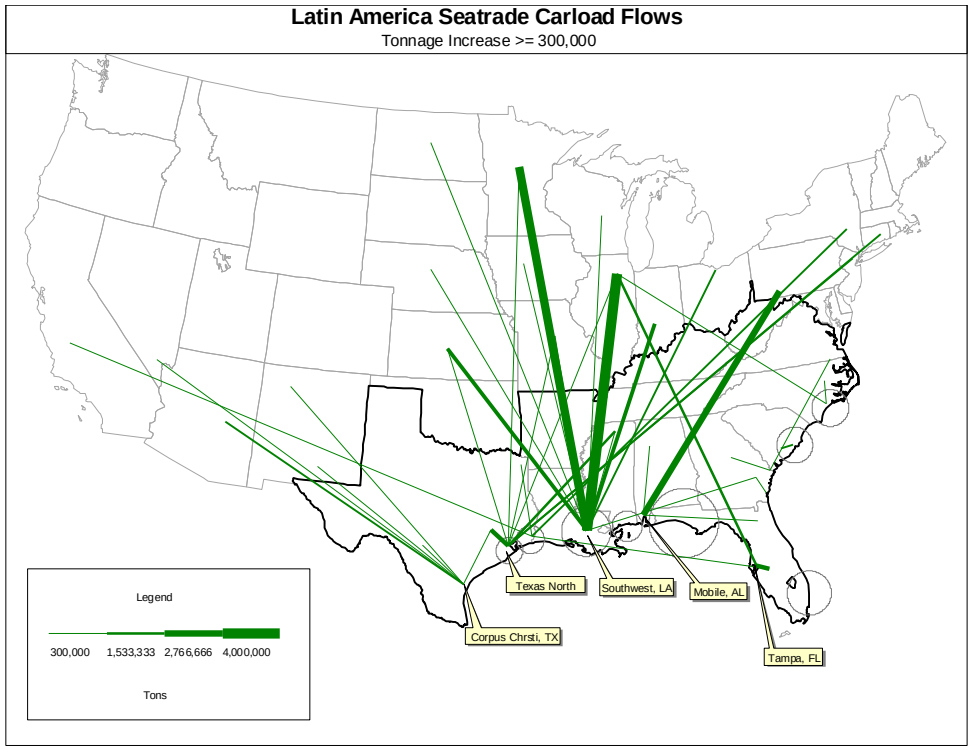


Exhibit C3-7

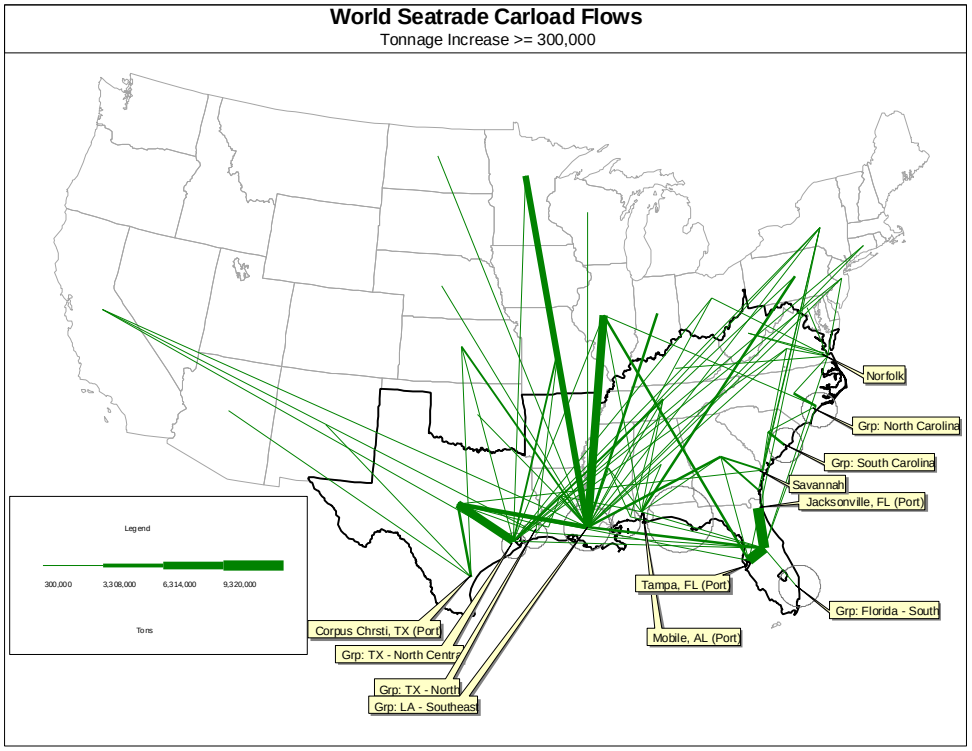
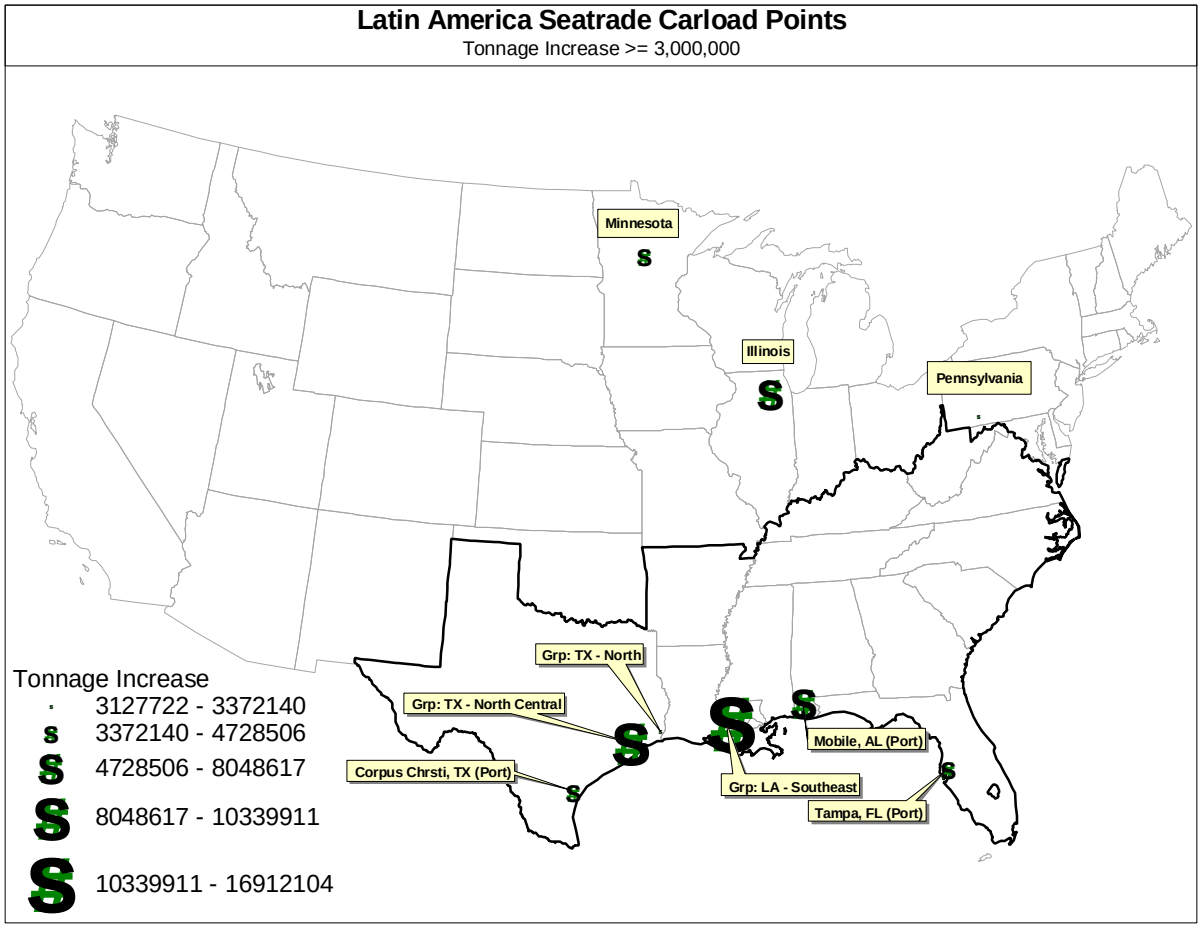


Exhibit C3-8



The additional activity resulting from worldwide trade is evident in **Exhibit C3-9**. The number of locations, both ports and interior points, increases dramatically. Note that much of the inland activity is also contained within the Alliance states.

Seatrade Intermodal Flows

Exhibit C3-10 depicts LATTS Seatrade rail intermodal flows. These flows are concentrated in Florida, North Central Texas and Norfolk, Virginia. The flows shown on the map represent 40 percent of the total LATTS-related intermodal flows. Hence, the remaining 60 percent of intermodal flows represent a larger spectrum of origin-destination pairs. While Midwestern states and California are among the major non-Alliance states, the interior of many Alliance states are also involved.

Exhibit C3-9

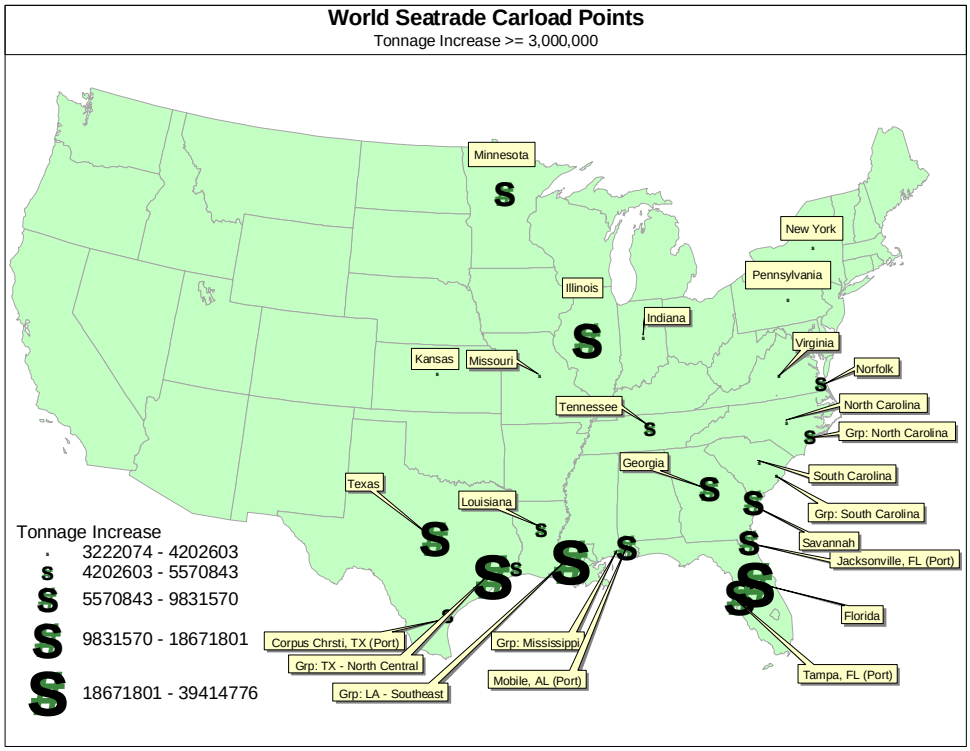
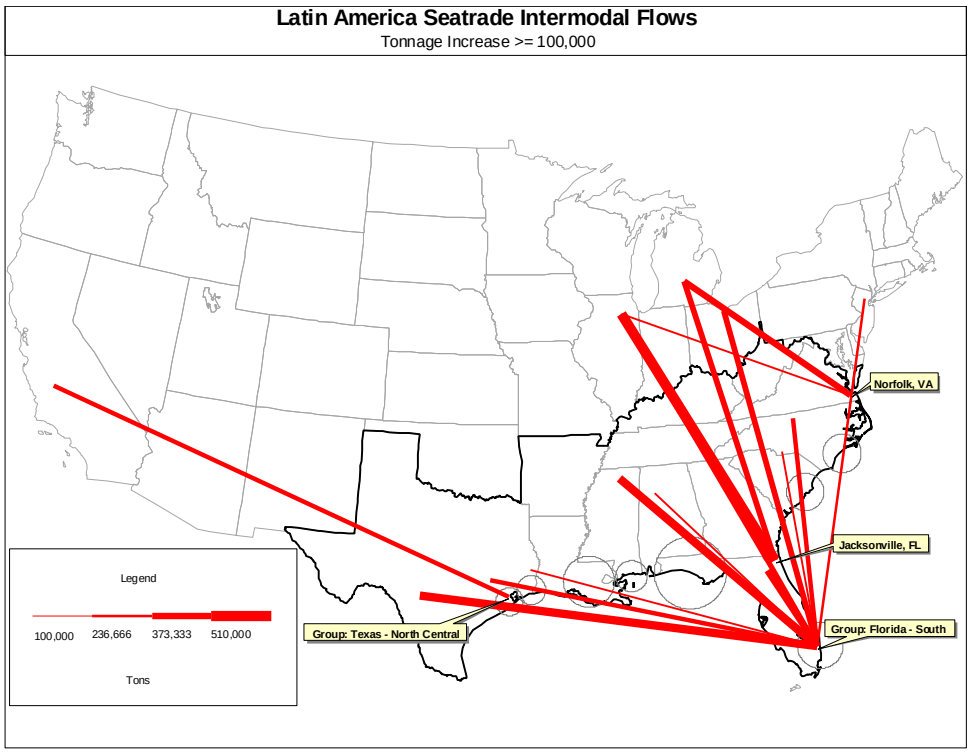
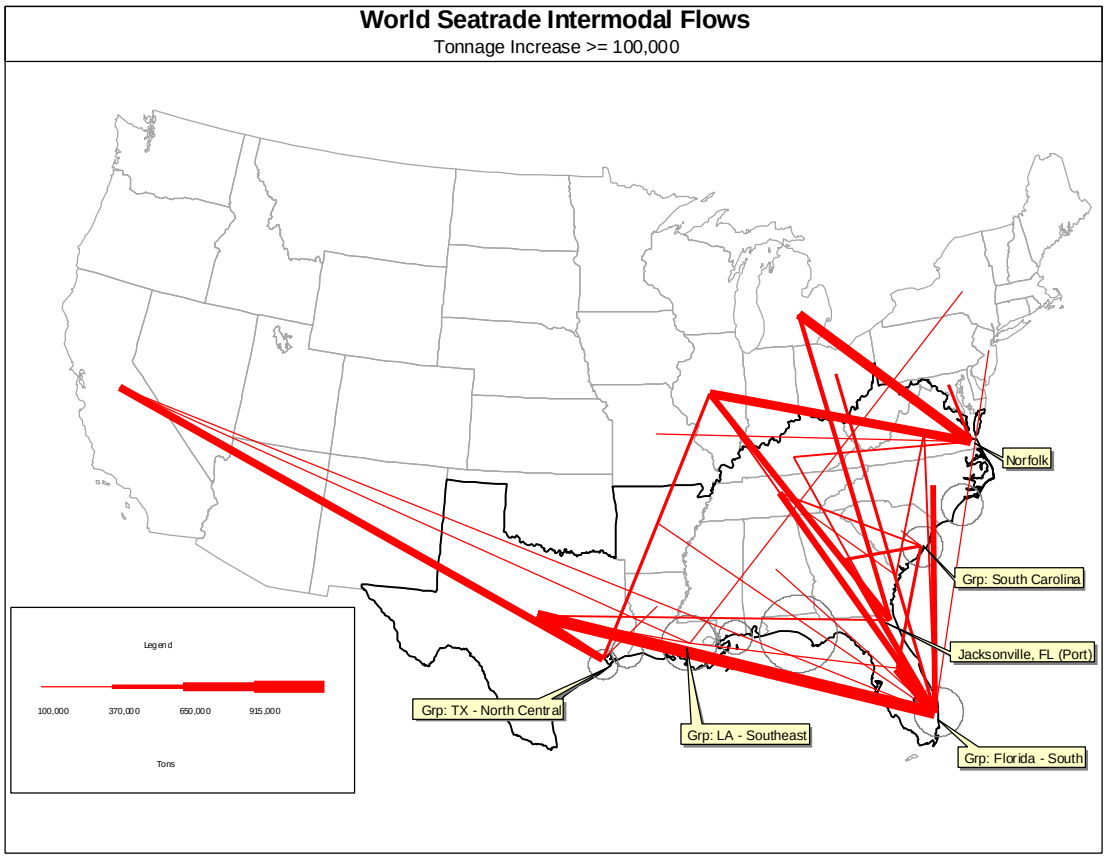


Exhibit C3-10



Consideration of worldwide flows in and out of Alliance ports, as shown on **Exhibit C3-11**, adds major movements from Texas to the Midwest, and Norfolk to Kentucky and Maryland. The South Carolina ports show up with flows to and from other LATTS states.

Exhibit C3-11



Seatrade Intermodal Points

Exhibit C3-12 identifies the major LATTS rail Seatrade intermodal points. The South Florida group of ports and Jacksonville, Florida are the only locales which met the screening criteria. This distinction is not that surprising given the location of these ports relative to Latin America. No locations beyond the Alliance Region met the criterion, demonstrating a lack of movement concentration.

The picture changed, however, when world trade was considered. As evident on **Exhibit C3-13**, South Carolina, Virginia and Texas ports, along with inland locations in Florida, Tennessee and Texas, show significant levels of activity.

Exhibit C3-12

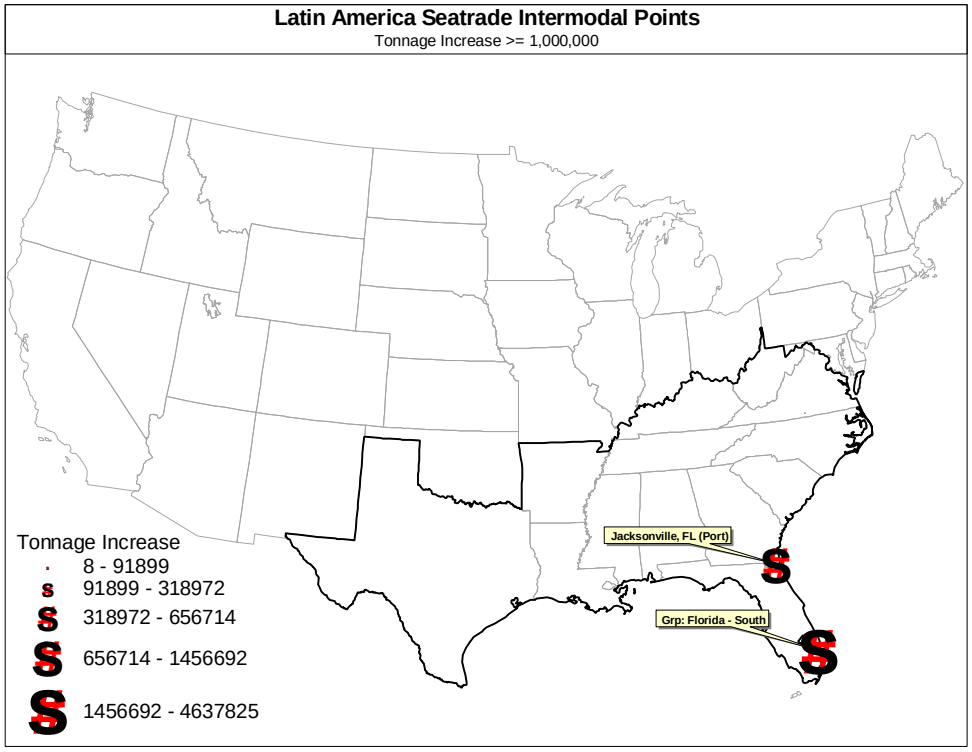
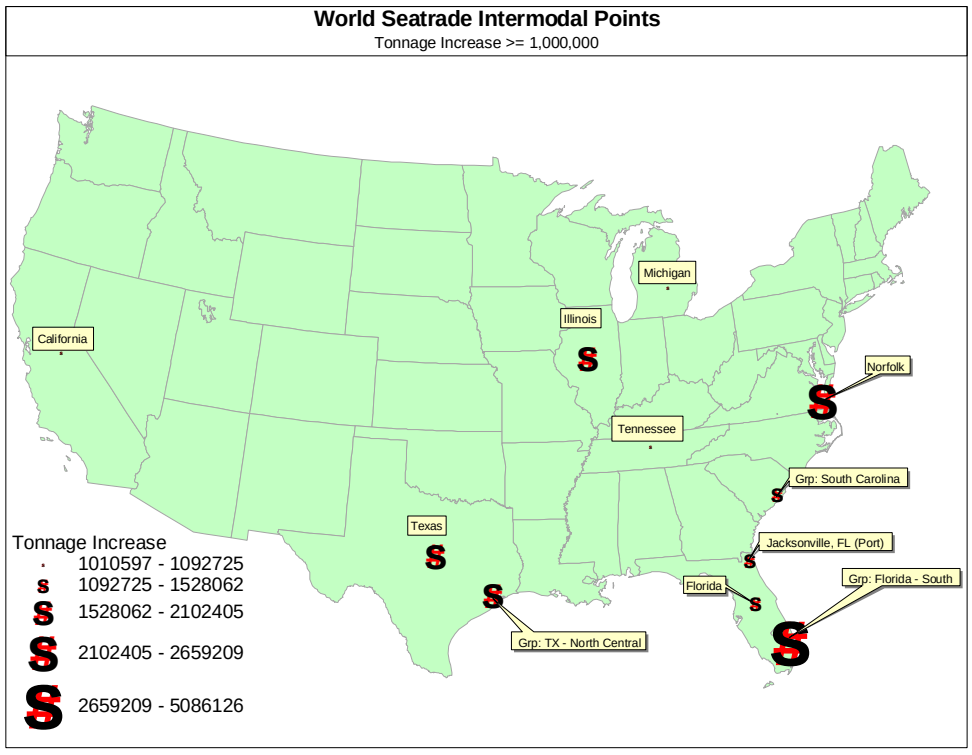


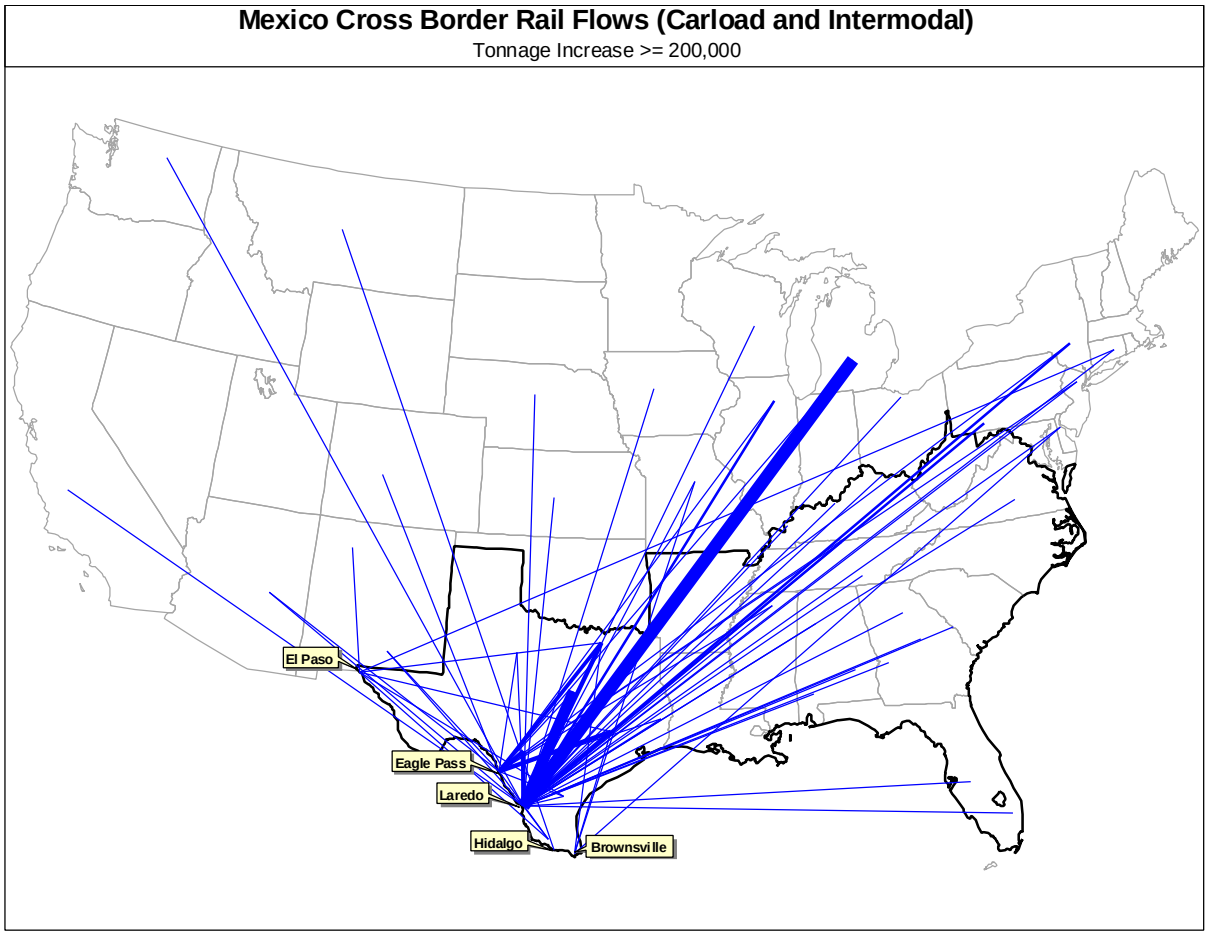
Exhibit C3-13



Cross-border Flows

As stated earlier, Texas is the only Alliance member that borders on Latin America and thus has the only ports of entry for land-based rail traffic. As shown on **Exhibit C3-14**, cross-border traffic movements of significance (70 percent of the total are represented on the exhibit) are more numerous and of a greater variety than the other two categories of rail movements. The dominant flows are to/from the Midwest and Northeast and internal to Texas. There is no distinction in cross-border flows between Latin American and worldwide traffic nor in carload vs. intermodal movements.

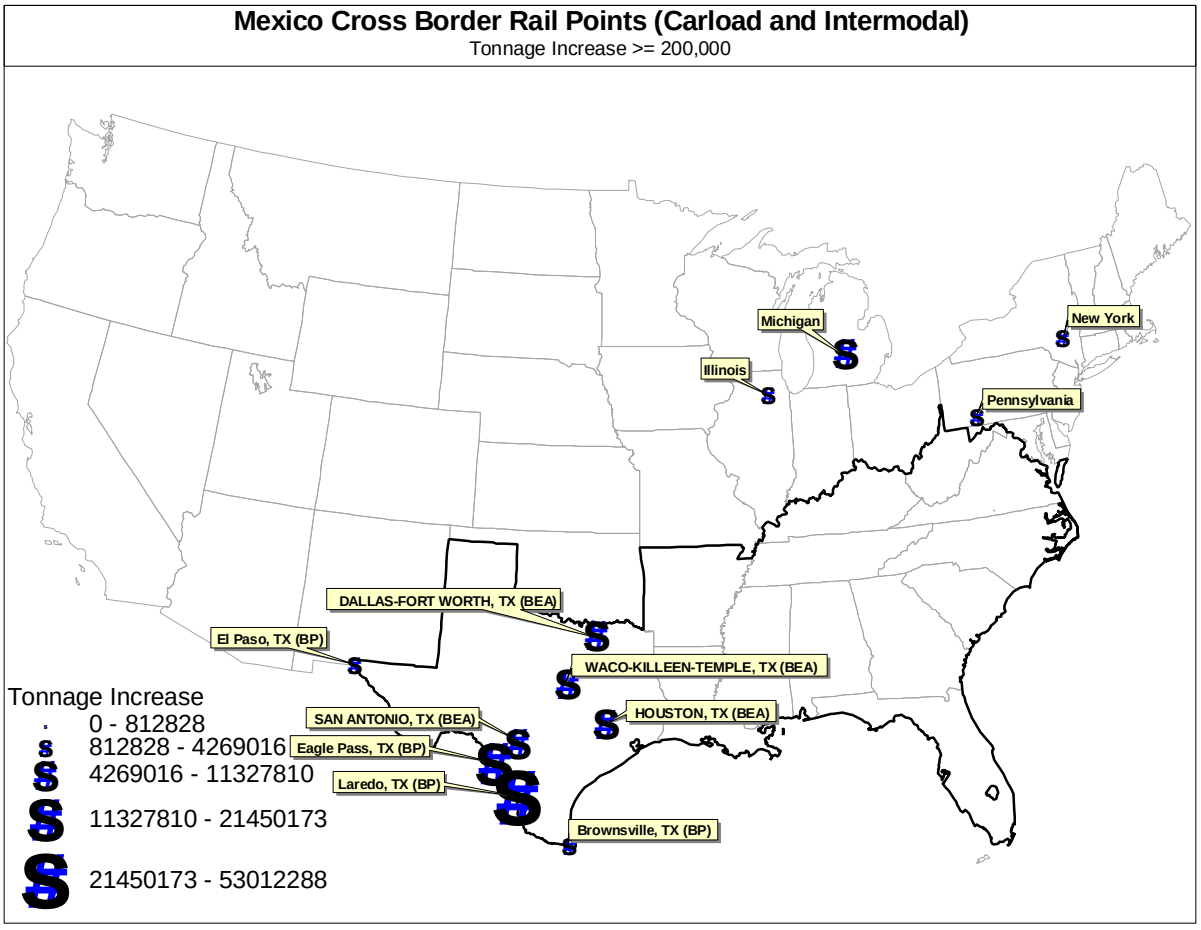
Exhibit C3-14



Cross-border Points

There are four border crossings -- El Paso, Eagle Pass, Laredo and Brownsville – which met the adopted criterion. The inland points (see **Exhibit C3-15**) are equally split (4 each) between Texas and the non-LATTS states of Illinois, Michigan, Pennsylvania and New York.

Exhibit C3-15



Combined Flows

Exhibit C3-16 is a composite of all three categories of Latin American rail traffic flows. The flows which met the screening criteria are all presented in the same scale on a tonnage basis so they can be compared with each other. This task is complicated by the difference in tonnage per typical carload commodities as compared to intermodal units. Further complicating any assessment is the mixture of both types in the cross-border flows. The same pattern is evident when world trade through the seaports is added (see **Exhibit C3-17**).

Regardless, it is evident that the largest rail tonnage is comprised of cross-border traffic. The largest carload movements, in large part, are attributable to ports in the States of Texas and Louisiana. Intermodal flows are primarily to and from Florida.

Exhibit C3-16

Cross Border and Latin American Seatrade Carload and Intermodal Flows

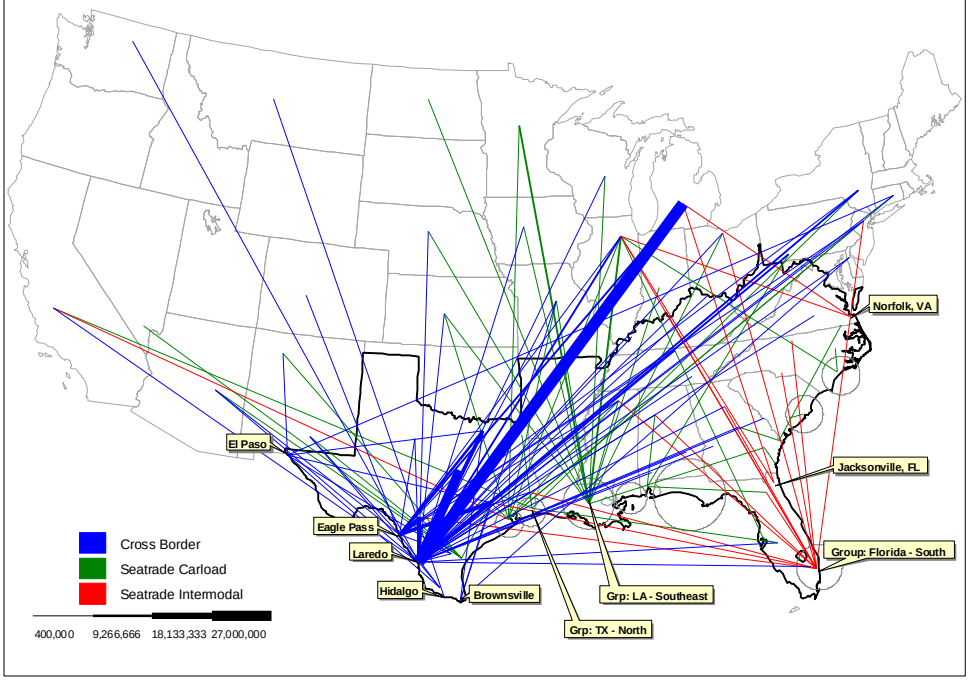
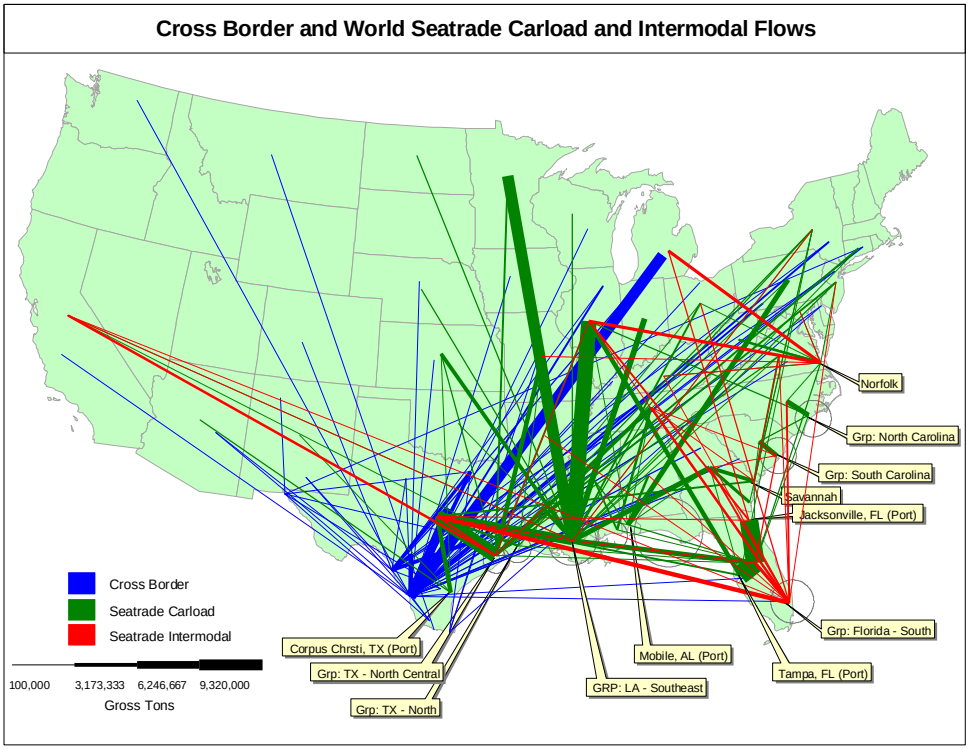


Exhibit C3-17

Cross Border and World Seatrade Carload and Intermodal Flows



Combined Points

Exhibit C3-18 is a composite of all cross-border, carload and intermodal Latin American traffic generation points. The majority of the locations which exceeded the established thresholds are located in Texas and are attributable to cross-border activity, including inland points, as well as Seatrade carload freight. Florida also has significant traffic levels at several locations due to Seatrade intermodal and carload activities. The Southeast Louisiana Group of Ports is the other major activity point in the Alliance Region. Outside the LATTS Region, the major locations lie in the Midwest and Northeast. The rail traffic associated with these areas is derived from waterport carload and cross-border activity.

Exhibit C3-18

Cross Border and Latin American Seatrade Carload and Intermodal Points

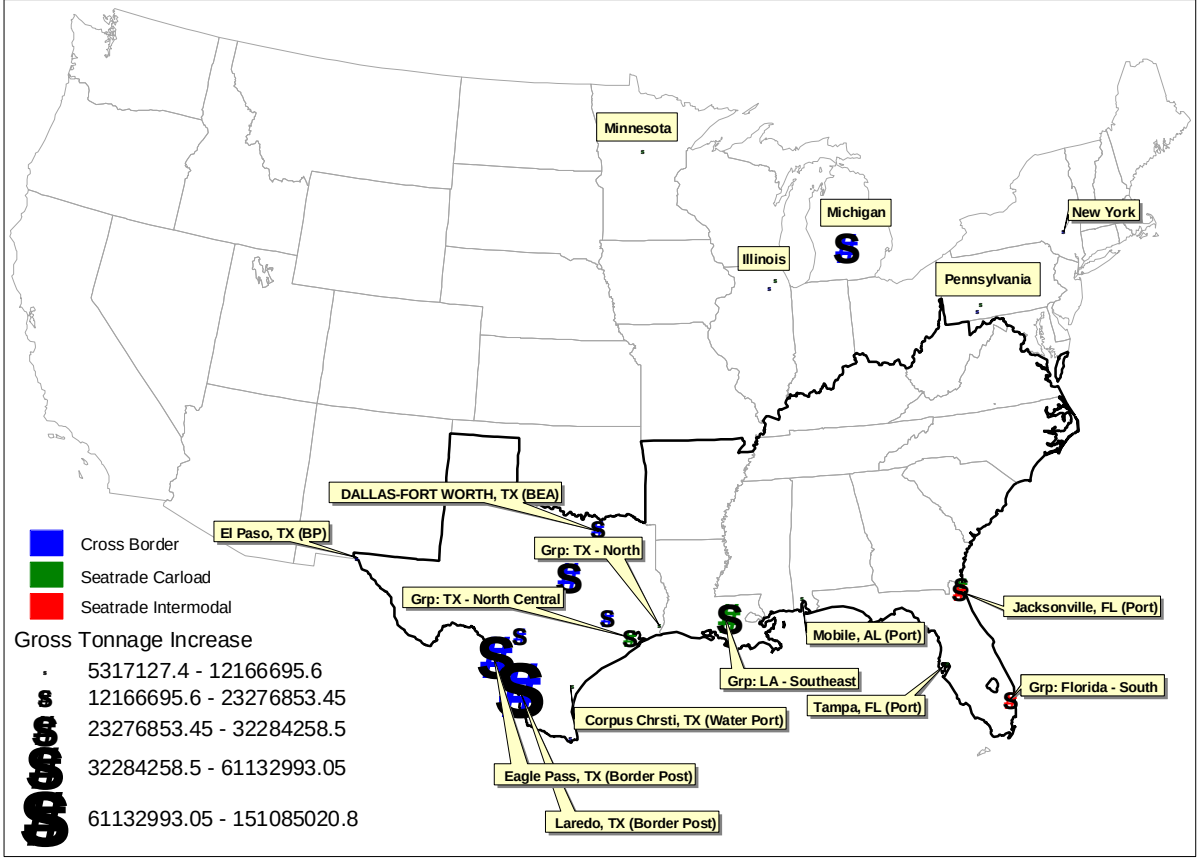
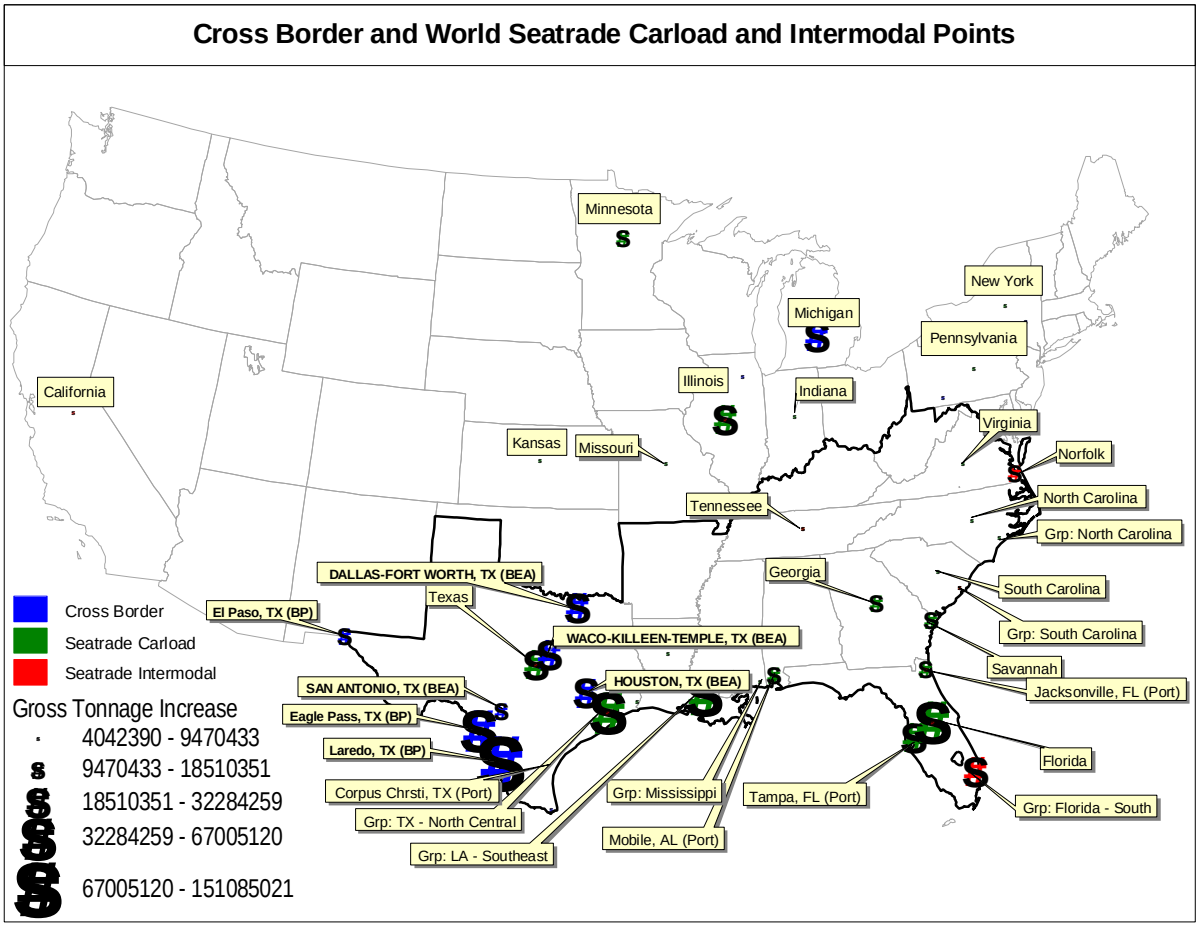


Exhibit C3-19 depicts the points of concentration considering worldwide trade. Additional Alliance and non-Alliance points are added in the depiction, but the major traffic generation centers remain the same, but with more activity.

Exhibit C3-19



RAIL SYSTEM IMPLICATIONS

The rail traffic concentrations provided insights regarding potential impacts on the LATTS Strategic Rail System. The growth in rail traffic in the last decade, combined with service problems related to recent mergers, have already created network congestion and revealed capacity constraints throughout the Alliance states.

The growth in rail traffic forecast for the Alliance states will exacerbate existing problems. Area-specific locations and flows were identified in the preceding discussion. Unlike highway trips which tend to take the path of least resistance and lend themselves to conventional traffic modeling techniques, rail traffic tends to move over the system of the originating carrier as far as possible or as

prescribed in railroad/shipper contracts. Therefore, as the LATTS traffic database is not railroad-specific, it is not possible to determine individual rail lines which would be used in areas served by more than one railroad. In fact, most of the locations and routes identified as potential problem areas in the review of rail traffic increases are served by more than one rail carrier.

Regardless, it is evident that the Strategic Rail System will be adversely impacted in certain locations. Texas, for example, especially as it relates to connections to border crossings, will need attention. Flows from Texas and selected Gulf ports to the Midwest and Northeast will also require attention. While multiple routes over several railroads may be available between some points, they are more limited at others. The east coast of Florida, for example, will undergo significant increases in intermodal traffic with few options.

STRATEGIC RAIL SYSTEM ADJUSTMENTS

While it was not possible as part of these analyses to focus upon individual rail lines, the Strategic Rail System shown on Exhibit C3-2 was re-examined using the results of the rail traffic analysis. After consideration of the forecast increased demand, additional segments were included in the system to enhance capacity and meet other needs that became evident during the system re-examination. The effort was conducted on a railroad-by-railroad basis.

Burlington Northern and Santa Fe

Two line segments were added to the BNSF (see **Exhibit C3-20**). The first is in Texas and runs from Somerville to Beaumont. This segment would add capacity for transcontinental traffic from the Southeast as well as bypass the Houston area. The second, from Columbus, Mississippi to Mobile, Alabama, (Kimbrough, Alabama to Mobile is via trackage rights over NS) would add capacity and direction alternatives for movements in and out of Mobile.

CSX Transportation

The additional CSXT segments, shown in **Exhibit C3-21**, serve two purposes. The first is to provide additional capacity along routes which could be subjected to major flows (Waycross, Georgia to Montgomery with a Bainbridge, Georgia to Tallahassee connection; and Montgomery to LaGrange, Georgia). The second is to fill in missing CSX intermodal system route connections (Augusta to Atlanta; Monroe, North Carolina to Charlotte; and Weldon, North Carolina to Norfolk).

Norfolk Southern

As shown **on Exhibit C3-22**, four NS route segments were added to the Strategic Rail System – Mobile to Birmingham, Macon to Birmingham, Charleston to Spartanburg, and Selma, North Carolina to Greensboro, North Carolina. The first segment provides additional capacity to the Port of Mobile. The second segment is an inactive line being reopened by NS as a bypass of Atlanta, a congested terminal. The third segment is part of the NS intermodal

Exhibit C3-20

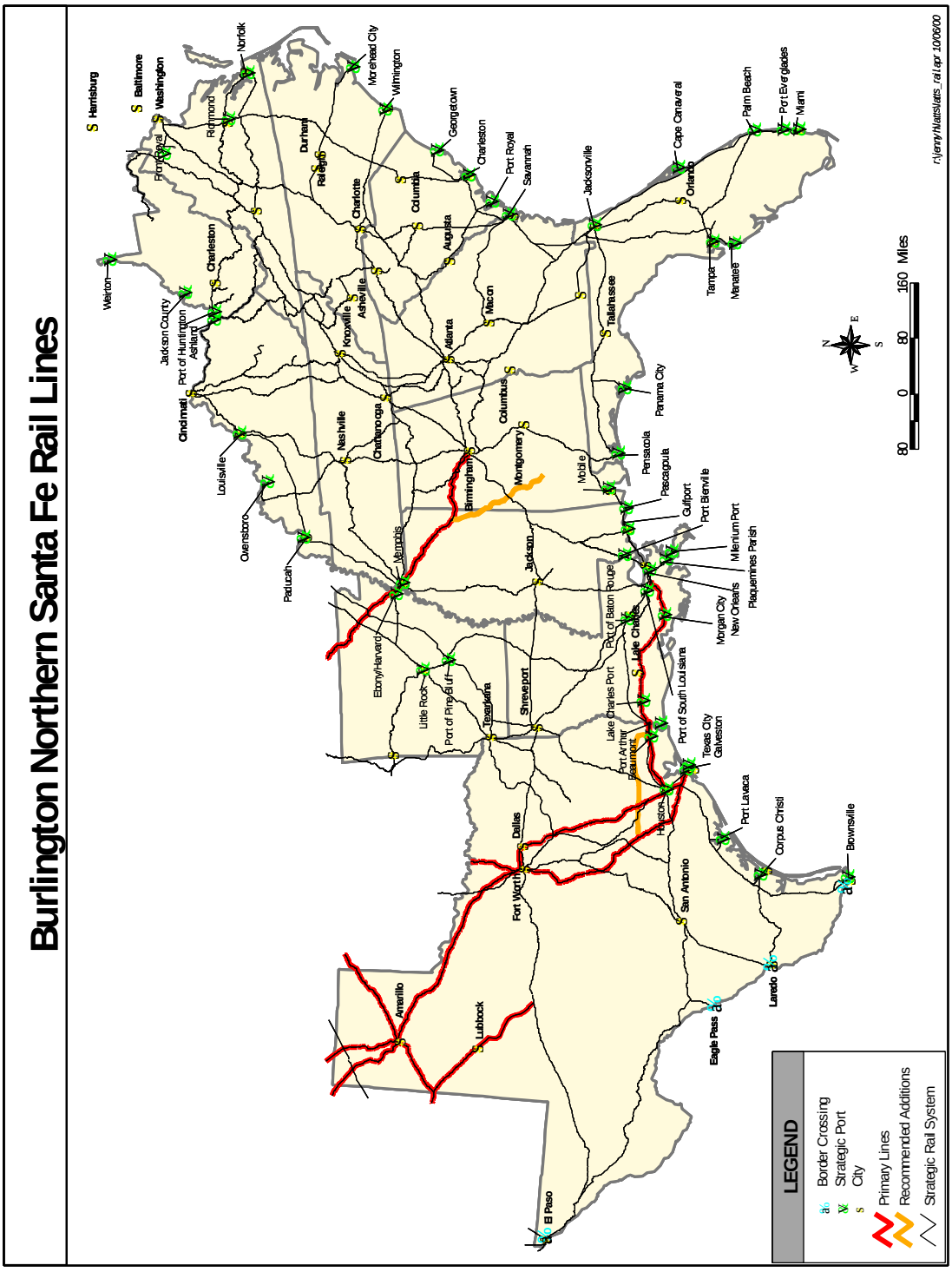


Exhibit C3-21

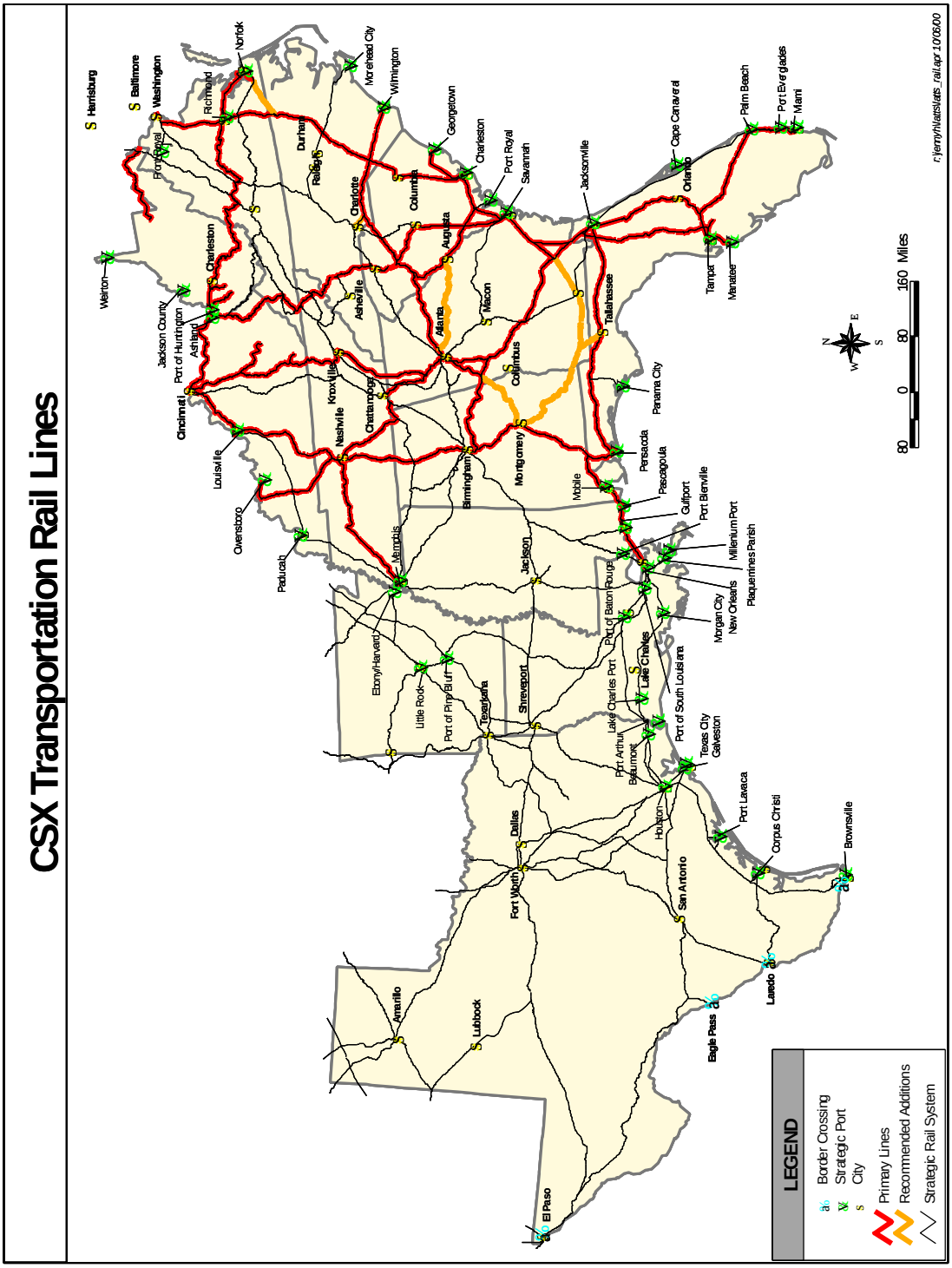
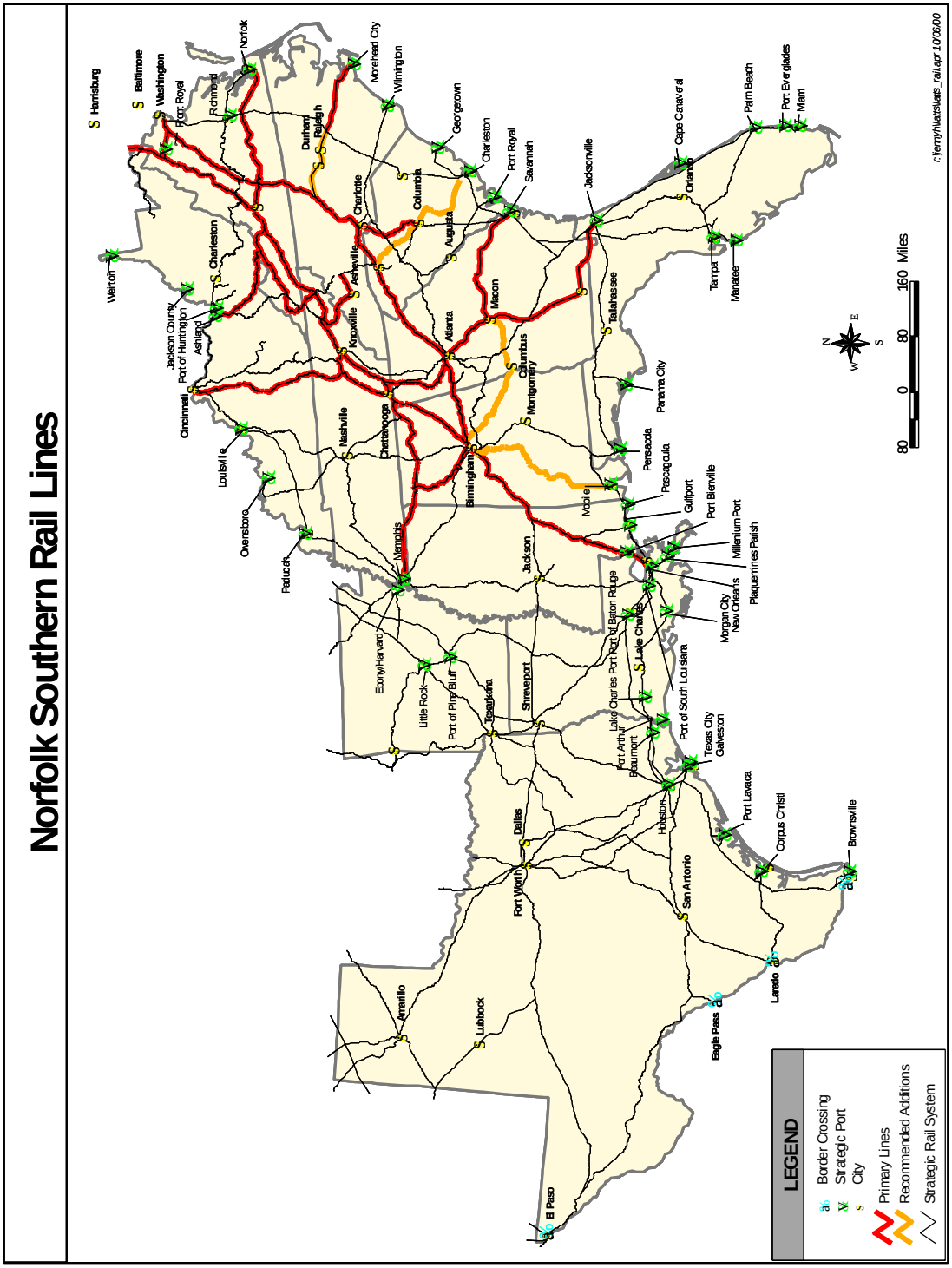


Exhibit C3-22



system providing a connection with the Port of Charleston. The fourth segment was added at the request of the State of North Carolina as part of the state-owned North Carolina Railroad.

Union Pacific

Additions to the UP (see **Exhibit C3-23**) consist of two line segments in Texas -- Houston to Palestine, and Taylor to Palestine that are part of a directional operation (predominate one-way operation over paired lines). A third Texas line segment, Bloomington to Flatonia, over which the Texas Mexican has rights and uses to reach its sister railroad Kansas City Southern, completes a route to the border crossing at Laredo.

Other Railroads

Two other railroads have line segments that were added as components of the LATTS Strategic Rail System as illustrated on **Exhibit C3-24**. The addition just north of Corpus Christi is the same UP line that was just discussed for the TM of Kansas City Southern Industries. The two KCS lines running west and south of Shreveport complete connections for a joint KCS-NS intermodal service and Port Arthur, respectively. The Canadian National line (and trackage rights) from Jackson, Mississippi to Mobile provides an additional connection for the latter.

FINAL STRATEGIC RAIL SYSTEM

The final Strategic Rail System is presented in **Exhibit C3-25**. It incorporates the original designated lines and the supplements just discussed. The system is presented in such a fashion as to reveal the ownership (railroad) of each component.

The LATTS Strategic Rail System includes 22,285 miles of rail lines. Mileage by state is presented in **Exhibit C3-26**

Exhibit C3-23

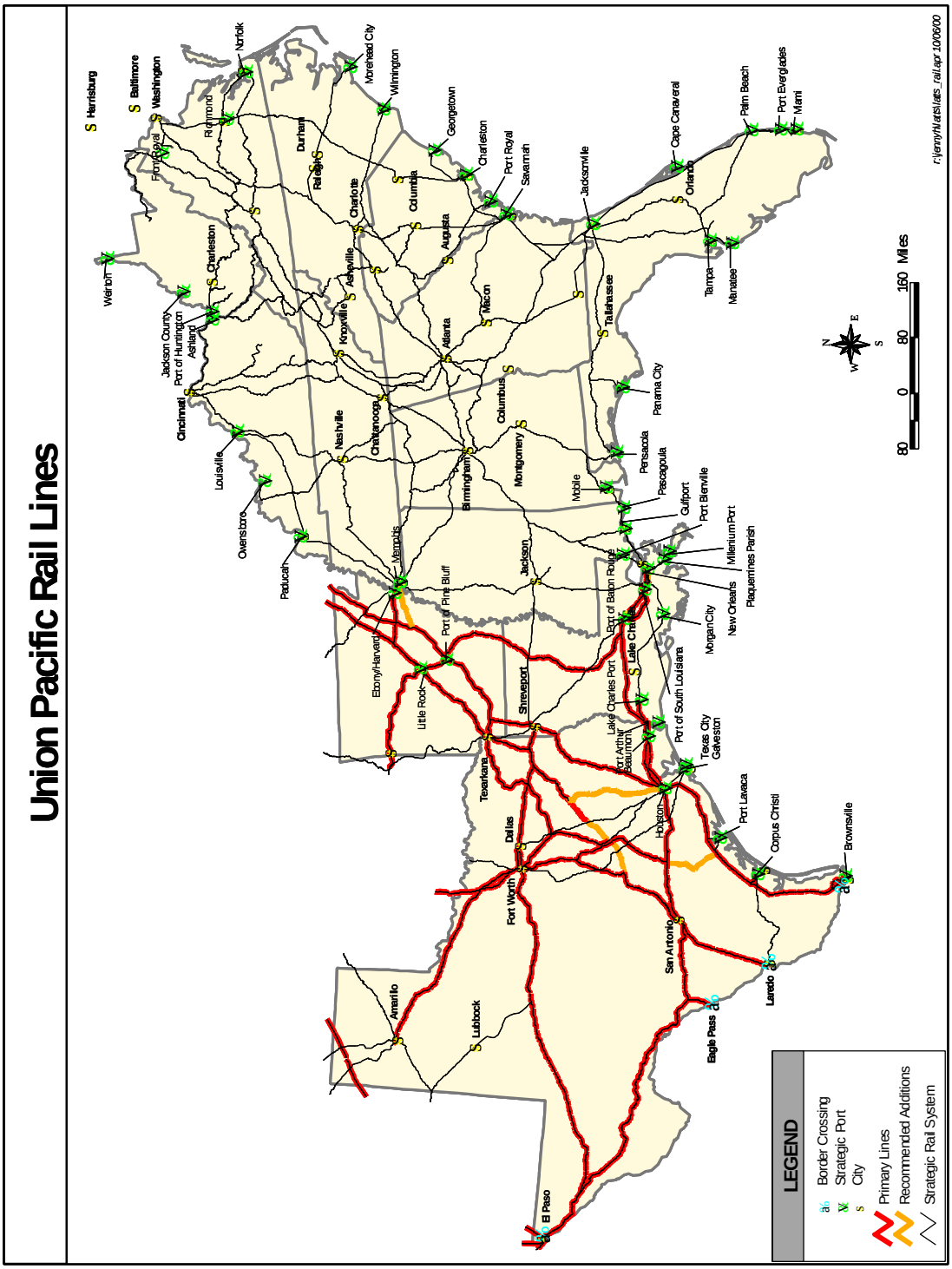


Exhibit C3-24

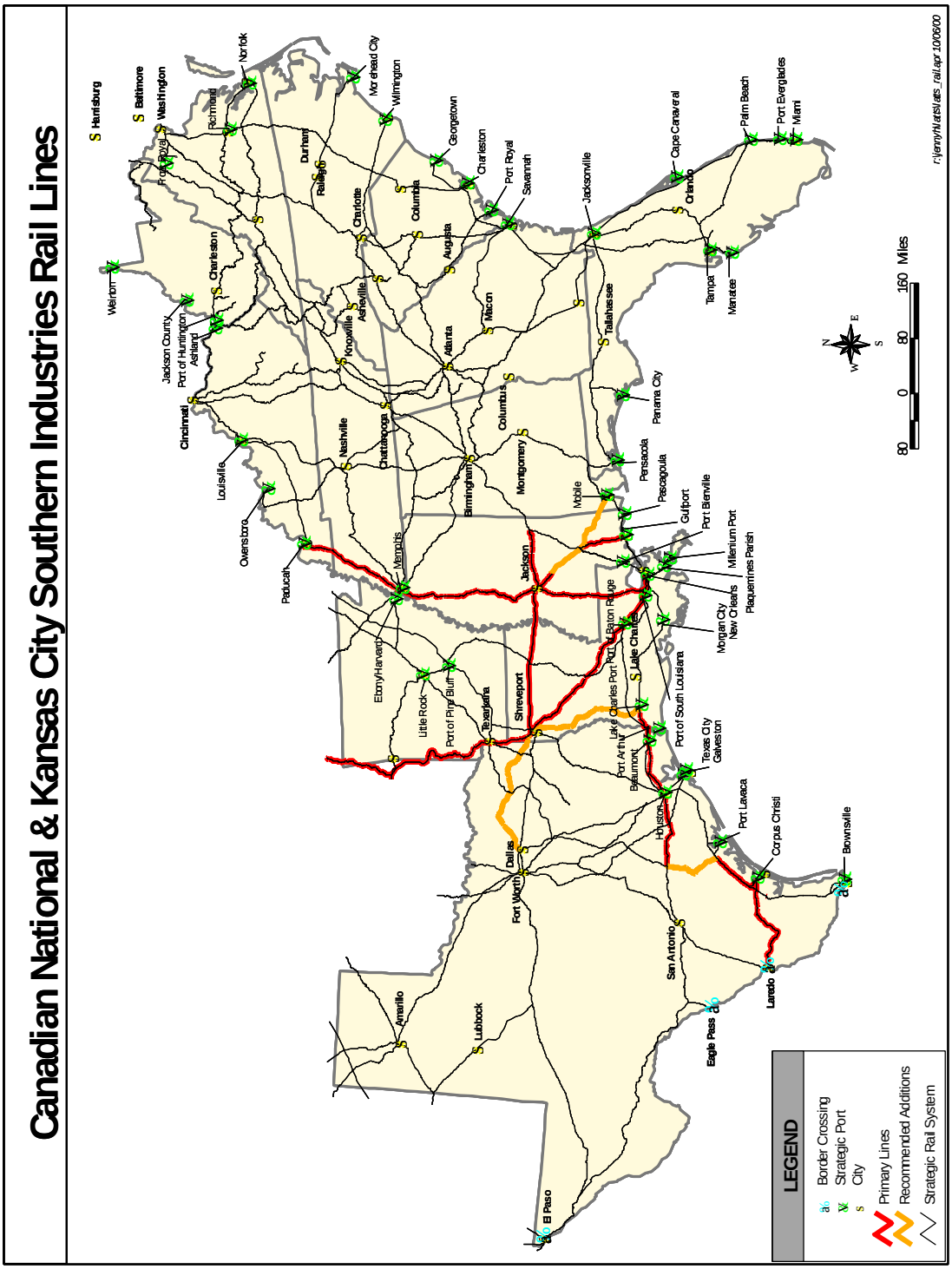


Exhibit C3-25

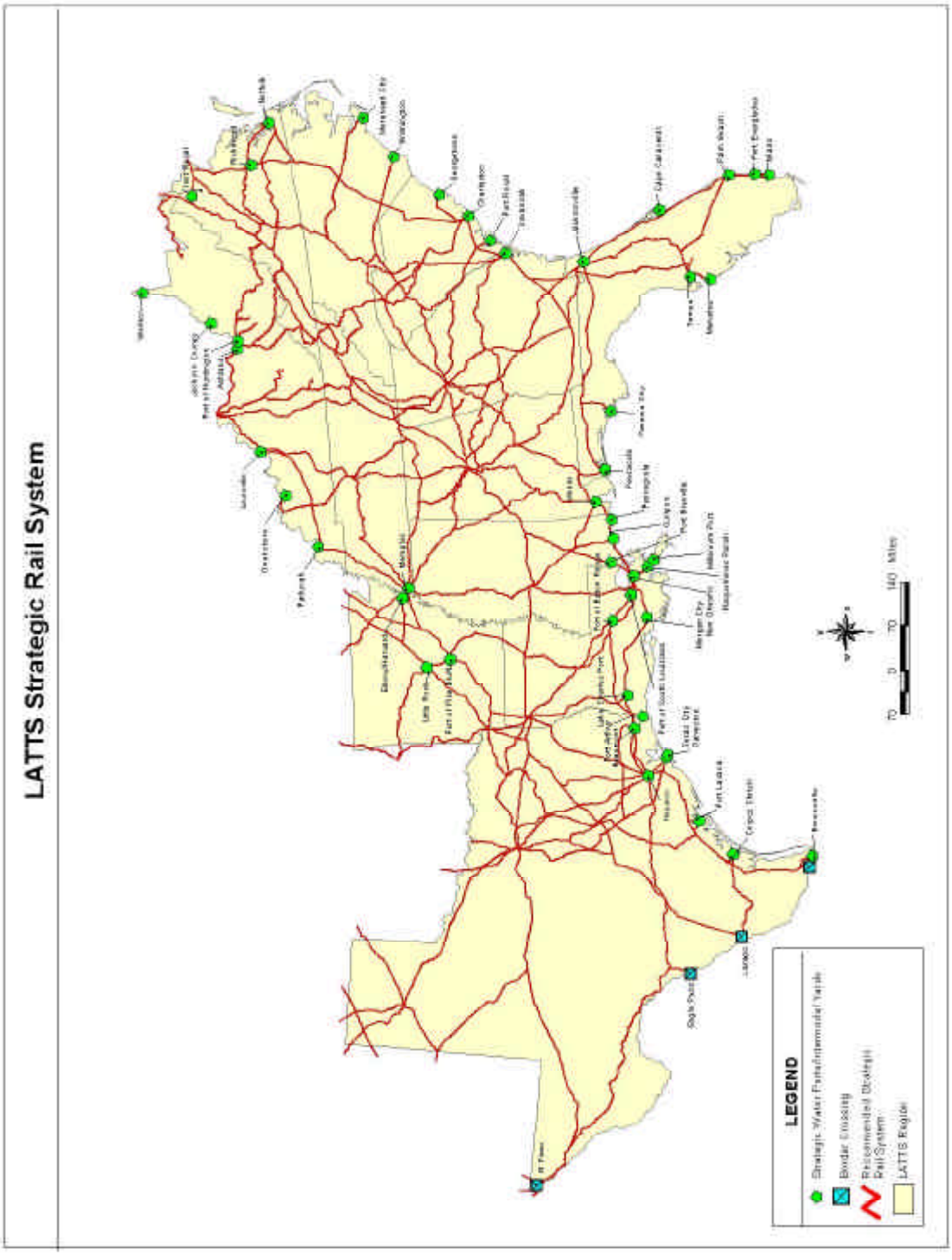


Exhibit C3-26
STRATEGIC RAIL SYSTEM MILEAGE

Alabama	1,634
Arkansas	1,293
Florida	1,548
Georgia	2,115
Kentucky	1,392
Louisiana	1,465
Mississippi	1,051
North Carolina	1,174
South Carolina	1,284
Tennessee	1,391
Texas	5,544
Virginia	1,716
West Virginia	678
Total	**22,285**